*Journal of*

# *Applied Ecology*

# Journal of Applied Ecology

Volume 35
1998

EDITORS
M. W. Pienkowski & A. R. Watkinson

MANAGING EDITOR
G. Kerby

EDITORIAL REVIEW BOARD:

L. G. Firbank
R. E. Green
A. J. Hester
D. A. Hill
M. O. Hill
W. M. Lonsdale
D. I. McCracken
R. H. Marrs
S. J. Ormerod
P. Rothery
R. W. Snaydon
J. Treweek
L. G. Underhill
N. R. Webb

Published for the British Ecological Society by
Blackwell Science Ltd

OXFORD LONDON EDINBURGH BOSTON
MELBOURNE BERLIN TOKYO

This journal is covered by *CABS, Chemical Abstracts, Current Contents, ASCA, Geo Abstracts, GEOBASE* and *Science Citation Index*

© 1998 British Ecological Society. Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by The British Ecological Society for libraries and other users registered with the Copyright Clearance Centre (CCC) Transactional Reporting Service, provided that the base fee of $14.00 per copy is paid directly to CCC, 222 Rosewood Drive, Suite 910, Danvers, MA 01923, USA. This consent does not extend to other kinds of copying for general distribution, for advertising or promotional purposes, for creating new collective works or for resale.

Typeset by Polestar Digital Data Ltd, Glasgow. Printed in Great Britain by the Alden Group, Oxford.

# Contents

**Volume 35 Number 1 1998**

**Essay Review**

1 J. WARNKEN & R. BUCKLEY.
Scientific quality of tourism Enviromental Impact Assessment

**Standard Papers**

9 A. J. GREEN & G. M. HILTON.
Management procedures required to increase chironomid availability to waders feeding on artificial lagoons remain unclear

13 R. A. MEDELLÍN & M. EQUIHUA.
Mammal species richness and habitat use in rainforest and abandoned agricultural fields in Chiapas, Mexico

24 G. M. SIRIWARDENA, S. R. BAILLIE, S. T. BUCKLAND, R. M. FEWSTER, J. H. MARCHANT & J. D. WILSON.
Trends in the abundance of farmland birds: a quantitative comparison of smoothed Common Birds Census indices

44 C. C. VOS & J. P. CHARDON.
Effects of habitat fragmentation and road density on the distribution pattern of the moor frog *Rana arvalis*

57 S. M. PERCIVAL, W. J. SUTHERLAND & P. R. EVANS.
Intertidal habitat loss and wildfowl numbers: applications of a spatial depletion model

64 R. BERNAL.
Demography of the vegetable ivory palm *Phytelephas seemanii* in Colombia, and the impact of seed harvesting

75 K. NORRIS, R. C. A. BANNISTER & P. W. WALKER.
Changes in the number of oystercatchers *Haematopus ostralegus* wintering in the Burry Inlet in relation to the biomass of cockles *Cerastoderma edule* and its commercial exploitation

86 N. C. JOHNSON.
Responses of *Salsola kali* and *Panicum virgatum* to mycorrhizal fungi, phosphorus and soil organic matter: implications for reclamation

95 C. S. ELPHICK & L. W. ORING.
Winter management of California rice fields for waterbirds

109 B. M. FREITAS & R. J. PAXTON.
A comparison of two pollinators: the introduced honey bee *Apis mellifera* and an indigenous bee *Centris tarsata* on cashew *Anacardium occidentale* in its native range of Brazil

122 P. G. TRIMPER, N. M. STANDEN, L. M. LYE, D. LEMON, T. E. CHUBBS & G. W. HUMPHREYS.
Effects of low-level jet aircraft noise on the behaviour of nesting osprey

131 J. G. POULSEN, N. W. SOTHERTON & N. J. AEBISCHER.
Comparative nesting and feeding ecology of skylarks *Alauda arvensis* on arable farmland in southern England with special reference to set-aside

148 K. J. KIRBY, C. M. REID, R. C. THOMAS & F. B. GOLDSMITH.
Preliminary estimates of fallen dead wood and standing dead trees in managed and unmanaged forests in Britain

156 J. H. HOFFMANN, V. C. MORAN & D. A. ZELLER.
Long-term population studies and the development of an integrated management programme for control of *Opuntia stricta* in Kruger National Park, South Africa

161 J. D. MAJER & O. G. NICHOLS.
Long-term recolonization patterns of ants in Western Australian rehabilitated bauxite mines with reference to their use as indicators of restoration success

183 Book Reviews

184 Editors' Announcement

185 Instructions for Contributors

**Volume 35 Number 2 1998**

**Standard Papers**

185 S. B. HOLMES.
Reproduction and nest behaviour of Tennessee warblers *Vermivora peregrina* in forests treated with Lepidoptera-specific insecticides

195 M. KELLMAN, R. TACKABERRY & L. RIGG.
Structure and function in two tropical gallery forest communities: implications for forest conservation in fragmented systems

207 S. LARIVIÈRE & F. MESSIER.
Denning ecology of the striped skunk in the Canadian prairies: implications for waterfowl nest predation

214 T. R. SHANKAR RAMAN, G. S. RAWAT & A. J. T. JOHNSINGH.
Recovery of tropical rainforest avifauna in relation to vegetation succession following shifting cultivation in Mizoram, north-east India

232 G. BLANCO, J. L. TELLA & I. TORRE.
Traditional farming and key foraging habitats for chough *Pyrrhocorax pyrrhocorax* conservation in a Spanish pseudosteppe landscape

240 E. J. MILNER-GULLAND & B. LHAGVASUREN.
Population dynamics of the Mongolian gazelle *Procapra gutturosa*: an historical analysis

252 J. GRIFFITHS, D. S. PHILLIPS, S. G. COMPTON, C. WRIGHT & L. D. INCOLL.
Responses of slug numbers and slug damage to crops in a silvoarable agroforestry landscape

261 D. J. AUGUSTINE.
Modelling *Chlamydia*–koala interactions: coexistence, population dynamics and conservation implications

273 E. V. TRUMPER & J. HOLT.
Modelling pest population resurgence due to recolonization of fields following an insecticide application

286 M. GALETTI & A. ALEIXO.
Effects of palm heart harvesting on avian frugivores in the Atlantic rain forest of Brazil

294 M. GALETTI & J. C. FERNANDEZ.
Palm heart harvesting in the Brazilian Atlantic forest: changes in industry structure and the illegal trade

302 E. KREMER & L. A. P. LOTZ.
Germination and emergence characteristics of triazine-susceptible and triazine-resistant biotypes of *Solanum nigrum*

311 T. VIRTANEN, S. NEUVONEN & A. NIKULA.
Modelling topoclimatic patterns of egg mortality of *Epirrita autumnata* (Lepidoptera: Geometridae) with a Geographical Information System: predictions for current climate and warmer climate scenarios

323 P. J. LESTER, H. M. A. THISTLEWOOD & R. HARMSEN.
The effects of refuge size and number on acarine predator–prey dynamics in a pesticide-disturbed apple orchard

332 E. H. RIES, L. R. HIBY & P. J. H. REIJNDERS.
Maximum likelihood population size estimation of harbour seals in the Dutch Wadden Sea based on a mark–recapture experiment

**Forum Paper**

340 R. P. FRECKLETON & A. R. WATKINSON.
How does temporal viability affect predictions of weed population numbers?

345 Book Reviews

**Volume 35, Number 3 1998**

**Standard Papers**

349 A. P. SCHAFFERS, M. C. VESSEUR & K. V. SÝKORA.
Effects of delayed hay removal on the nutrient balance of roadside plant communities

365 G. PICKUP, G. N. BASTIN & V. H. CHEWINGS.
Identifying trends in land degradation in non-equilibrium rangelands

378 P. E. STANDER.
Spoor counts as indices of large carnivore populations: the relationship between spoor frequency, sampling effort and true density

386 J. MADSEN.
Experimental refuges for migratory waterfowl in Danish wetlands. I. Baseline assessment of the disturbance effects of recreational activities

398 J. MADSEN.
Experimental refuges for migratory waterfowl in Danish wetlands. II. Tests of hunting disturbance effects

418 W. J. SUTHERLAND.
The effect of local change in habitat quality on populations of migratory species

422 W. A. HOFFMANN.
Post-burn reproduction of woody plants in a neotropical savanna: the relative importance of sexual and vegetative reproduction

434 R. P. PECH & G. M. HOOD.
Foxes, rabbits, alternative prey and rabbit calcivirus disease: consequences of a new biological control agent for an outbreaking species in Australia

**Forum Papers: Disturbance in Tropical Forests**

454 M. NUMMELIN.
Log-normal distribution of species abundances is not a universal indicator of rain forest disturbance

458 J. K. HILL & K. C. HAMER.
Using species–abundance models as indicators of habitat disturbance in tropical forests

461 Y. BASSET, V. NOVOTNY, S. E. MILLER & N. D. SPRINGATE.
Assessing the impact of forest disturbance on tropical invertebrates: some comments

467 A. D. WATT.
Measuring disturbance in tropical forests: a critique of the use of species–abundance models and indicator measures in general

470 Book Reviews

**Volume 35, Number 4 1998**

**Standard Papers**

479 R. H. MARRS, S. W. JOHNSON & M. G. LE DUC.
Control of bracken and restoration of heathland. VI. The response of bracken fronds to 18 years of continued bracken control or 6 years of control followed by recovery

491 B. W. BROOK & J. KIKKAWA.
Examining threats faced by island birds: a population viability analysis on the Capricorn silvereye using long-term data

504 J. FRIEDLI & T. FRANK.
Reduced applications of metaldehyde pellets for reliable control of the slug pests *Arion lusitanicus* and *Deroceras reticulatum* in oilseed rape adjacent to sown wildflower strips

514 H. VAN DEN BERG, B. M. SHEPARD & NASIKIN.
Response of soybean to attack by stemfly *Melanagromyza sojae* in farmers' fields in Indonesia

523 K. R. CLARKE & R. M. WARWICK.
A taxonomic distinctness index and its statistical properties

532 R. M. WARWICK & K. R. CLARKE.
Taxonomic distinctness and environmental assessment

544 M. O. AKINOLA, K. THOMPSON & S. M. BUCKLAND.
Soil seed bank of an upland calcareous grassland after 6 years of climate and management manipulations

553 M. SMITH & J. S. MOSS.
An experimental investigation, using stomatal conductance and fluorescence, of the flood sensitivity of *Boltonia decurrens* and its competitors

562 M. DÍAZ, R. CARBONELL, T. SANTOS & J. L. TELLERÍA.
Breeding bird communities in pine plantations of the Spanish plateaux: biogeography, landscape and vegetation effects

575 J. D. REYNOLDS & H. P. GUILLAUME.
Effects of phosphate on the reproductive symbiosis between bitterling and freshwater mussels: implications for conservation

582 Q. PAYNTER, S. V. FOWLER, J. MEMMOTT & A. W. SHEPPARD.
Factors affecting the establishment of *Cytisus scoparius* in southern France: implications for managing both native and exotic populations

596 L. NAUGHTON-TREVES, A. TREVES, C. CHAPMAN & R. WRANGHAM.
Temporal patterns of crop-raiding by primates: linking food availability in croplands and adjacent forest

**Forum Papers**

607 E. STAUB, K. EGLOFF, A. KRÄMER & J. WALTER.
The effect of predation by wintering cormorants *Phalacrocorax carbo* on grayling *Thymallus thymallus* and trout (Salmonidae) populations: two case studies from Swiss rivers. Comment

611 W. SUTER.
The effect of predation by wintering cormorants *Phalacrocorax carbo* on grayling *Thymallus thymallus* and trout (Salmonidae) populations: two case studies from Swiss rivers. Reply

617 Book Reviews

**Volume 35, Number 5 1998**

**Standard Papers**

621 K. NORRIS, E. A. BRINDLEY, T. COOK, S. BABBS, C. FORSTER BROWN & R. YAXLEY.
Is the density of redshank *Tringa totanus* nesting on saltmarshes in Great Britain declining due to changes in grazing management?

635 A. WAKEHAM-DAWSON, K. SZOSZKIEWICZ, K. STERN & N. J. AEBISCHER.
Breeding skylarks *Alauda arvensis* on Environmentally Sensitive Area arable reversion grass in southern England: survey-based and experimental determination of density

649 A. J. DAVY, S. J. DUNSFORD & A. J. FREE.
Acidifying peat as an aid to the reconstruction of lowland heath on arable soil: lysimeter experiments

660 S. J. DUNSFORD, A. J. FREE & A. J. DAVY.
Acidifying peat as an aid to the reconstruction of lowland heath on arable soil: a field experiment

673 Y. ZHANG, B. MALMQVIST & G. ENGLUND.
Ecological processes affecting community structure of blackfly larvae in regulated and unregulated rivers: a regional study

687 G. E. WEBER, F. JELTSCH, N. VAN ROOYEN & S. J. MILTON.
Simulated long-term vegetation response to grazing heterogeneity in semiarid rangelands

700 K. M. VIROLAINEN, T. SUOMI, J. SUHONEN & M. KUITUNEN.
Conservation of vascular plants in single large and several small mires: species richness, rarity and taxonomic diversity

708 T. TSCHARNTKE, A. GATHMANN & I. STEFFAN-DEWENTER.
Bioindication using trap-nesting bees and wasps and their natural enemies: community structure and interactions

720 M. A. LEARNER & H. A. CHAWNER.
Macro-invertebrate associations in sewage filter-beds and their relationship to operational practice

748 R. H. MARRS, S. W. JOHNSON & M. G. LE DUC.
Control of bracken and restoration of heathland. VII. The response of bracken rhizomes to 18 years of continued bracken control or 6 years of control followed by recovery

758 M. HANSSON & H. FOGELFORS.
Management of permanent set-aside on arable land in Sweden

772 A. J. HESTER & G. J. BAILLIE.
Spatial and temporal patterns of heather use by sheep and red deer within natural heather/grass mosaics

785 R. D. GREGORY & S. R. BAILLIE.
Large-scale habitat use of some declining British birds

800 A. BUTTLER, P. GROSVERNIER & Y. MATTHEY.
Development of *Sphagnum fallax* diaspores on bare peat with implications for the restoration of cut-over bogs

811 A. R. WERKER, A. M. DEWAR & R. HARRINGTON.
Modelling the incidence of virus yellows in sugar beet in the UK in relation to numbers of migrating *Myzus persicae*

819 Book Reviews

**Volume 35, Number 6 1998**

**Standard Papers**

821 D. E. BAKALOUDIS, C. G. VLACHOS & G. J. HOLLOWAY.
Habitat use by short-toed eagles *Circaetus gallicus* and their reptilian prey during the breeding season in Dadia Forest (North-eastern Greece)

829 J. RUSSELL-SMITH, P. G. RYAN, D. KLESSA, G. WAIGHT & R. HARWOOD.
Fire regimes, fire-sensitive vegetation, and fire management of the sandstone Arnhem Plateau, monsoonal northern Australia

847 T. FORSETH, O. UGEDAL, T. F. NAESJE & B. JONSSON.
Radiocaesium elimination in fish: variation among and within species

857 R. H. MARRS, S. W. JOHNSON & M. G. LE DUC.
Control of bracken and restoration of heathland. VIII. The regeneration of the heathland community after 18 years of continued bracken control or 6 years of control followed by recovery

871 M. LINDBLAD & C. SOLBRECK.
Predicting *Oscinella frit* population densities from suction trap catches and weather data

882 J. UTZINGER, C. ROTH & A. PETER.
Effects of environmental parameters on the distribution of bullhead *Cottus gobio* with particular consideration of the effects of obstructions

893 J. W. HORWOOD, J. H. NICHOLS & S. MILLIGAN.
Evaluation of closed areas for fish stock conservation

904 R. P. FRECKLETON & A. R. WATKINSON.
Predicting the determinants of weed abundance: a model for the population dynamics of *Chenopodium album* in sugar beet

**Technical Reports**

921 S. R. BRYANT, J. S. BALE & C. D. THOMAS.
Modification of the triangle method of degree-day accumulation to allow for behavioural thermoregulation in insects

928 P. A. ROBERTSON, N. J. AEBISCHER, R. E. KENWARD, I. K. HANSKI & N. P. WILLIAMS.
Simulation and jack-knifing assessment of home-range indices based on underlying trajectories

941 L. PELLETIER & C. J. KREBS.
Evaluation of aerial surveys of ptarmigan *Lagopus* species

**Forum Papers: Biodiversity and High-nature-value Farming**

948 Introduction

949 E. M. BIGNAL.
Using an ecological understanding of farmland to reconcile nature conservation requirements, EU agriculture policy and world trade agreements

955 G. N. OVENDEN, A. R. H. SWASH & D. SMALLSHIRE.
Agri-environment schemes and their contribution to the conservation of biodiversity in England

961 D. I. MCCRACKEN & E. M. BIGNAL.
Applying the results of ecological studies to land-use policies and practices

968 O. P. OSTERMANN.
The need for management of nature conservation sites designated under Natura 2000

974 G. BEAUFOY.
The EU Habitats Directive in Spain: can it contribute effectively to the conservation of extensive agro-ecosystems?

979 R. LUICK.
Ecological and socio-economic implications of livestock-keeping systems on extensive grasslands in south-western Germany

983 G. ZERVAS.
Quantifying and optimizing grazing regimes in Greek mountain systems

987 N. R. WEBB.
The traditional management of European heathlands

991 Book Reviews

992 Editors' Announcement

993 Editors' Note

996 Index